



REMARKS/ARGUMENT

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This is in response to the Final Office Action mailed February 6, 2002. Claims 1-13 remain. All of the independent claims 1, 4, 6 and 9 have been amended to recite that the umbilical is without an outside armor layer outward of the steel tubes and the at least one steel rod and claims 4 and 9 thereby indicate that there is no armor layers either inward or outward of the claimed sheath since such armor layer would be outward of the steel rod and steel tubes.

The applicant and the undersigned thank Examiners Walkenhorst and Reichard for conducting an interview with the undersigned, applicant's representative Philippe Hoffman and applicant's French patent attorney David Levy on April 8, 2002. As noted in the Interview Report, attention was directed to the references to Birkelund and Carroll.

Birkelund discloses armoring layers outward of the tubes 2 and rods 4 and Carroll discloses some armoring outward of whatever might be viewed as an umbilical or tubes.

Applicants' claims recite at least one steel rod 10 and/or supplemental rod 9 which are wound along with the steel tubes 5 and which absorb tensile load and provide ballast for the umbilical, in place of the armoring layers conventionally provided in the prior art. Applicant's claimed at least one steel rod is shaped and sized for absorbing tensile loading on the umbilical. If the at least one steel rod were not of sufficient size and of such shape as to accomplish that absorption of tensile loading, then armoring layers of the prior art would be required. As an example of the foregoing, the zinc rods in 5 of Birkelund are not sized or shaped to absorb tensile loading, and armoring layers are needed.

The absence of the armoring layers from applicants' claimed umbilical and method is a negative limitation of the type permitted in MPEP 2173.05(i):

"So long as the boundaries of the patent protection sought are set forth definitely, albeit negatively, the claim complies with the requirements of 35 U.S.C. § 112, second paragraph.

Any negative limitation or exclusionary proviso must have basis in the original disclosure."

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The claims definitely set forth the boundaries of protection. "Without an outside armor layer" is easy to understand and the presence or absence of such a layer on any umbilical should be indisputable.

The original disclosure supports the negative limitation, page 5 of applicants' specification, lines 4-6:

"Thus, the invention avoids the need to apply additional armoring layers to the outside of the umbilical for strength and ballast".

Page 5, line 25-page 6, line 2:

"With this arrangement, the steel rods act as both tension and ballast elements and the need of an outer layer of armoring is avoided".

Also see the comparison, starting at page 6, line 8 between the prior art and the present invention, where the prior art has the outer armoring layer and the present invention does not. Finally, compare prior art Fig. 1 with armoring layers against invention Fig. 2 without the layers.

Claims 1-10, 12 and 13 were rejected under 35 U.S.C. § 103 over a combination of Birkelund in view of Carroll. Reconsideration is requested.

It was acknowledged that Birkelund does not disclose a substantially solid steel rod shaped and sized for absorbing tensile loading on the umbilical. Instead, Birkelund only describes zinc wires 4, 5 provided for their electrical properties, not for tensile support or ballast. Birkelund of course needs and provides the armor layers 7 and 8 which applicants' present invention avoids, as claimed.

The Examiner notes the presence of a wound steel rod in Carroll. First, there would be no motivation to include Carroll's solid steel rod in Birkelund because Birkelund provides sufficient tensile strength and ballast through the outer armoring layers. An additional thickened steel rod sufficient to provide tensile strength inside the armoring layers would be duplication in function and require extra material. There would be no motivation to adopt a thicker rod from Carroll for use in Birkelund, for Birkelund has no need for a tensile strengthening in the voids between adjacent tubes.

Further, Carroll's wire 6 is not wound together with the tubes of an umbilical as applicant claims. Rather, Carroll's wire layer is by itself. There is no suggestion in Carroll and no

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motivation to wind Carroll's wire in voids between tubes in an umbilical and no motivation to use Carroll's wire to strengthen tensile strength or provide ballast.

As the Examiner notes, Carroll's wire 6 is for the purpose of increasing the resistance to torque and crush loads, that is, tangential and radial loads that act in a transverse plane.

Applicants' claimed steel rods wound with the steel tubes, as well as the prior art use of armoring layers, does not have the purpose of improving crush and torque resistance, which oppose forces transverse to the direction of extension of the umbilical. Applicant's claimed steel rods and armoring layers in the prior art are concerned with tensile stretch which acts longitudinally and seeks to elongate the umbilical. Carroll is not apparently concerned with that. In fact, the steel rod proposed by Carroll will act like a spring and will easily elongate itself without being able to resist tensile load.

If Carroll's type of steel rod were wound around an umbilical in short pitch, that would not resist tensile load. To absorb tensile load on Carroll's cable, it would be necessary to add armoring wire layers as taught in the Birkelund prior art and in prior art Fig. 1 of the present application.

Further, the Examiner said it would be obvious to modify the size and shape of a steel rod based upon its intended use and that mere change in size and shape is not beyond the level of ordinary skill in the art. But, in the present case, applicant did not merely change the size and shape of the steel rod. First, applicant conceived of installing at least one steel rod in the voids of the umbilical for tensile strength, then applicant made the rods a particular size and shape sufficient to accomplish tensile strengthening so that an entire prior art armoring layer might be avoided. This was not just a change in size and shape, but a major structural change eliminating a component disclosed in the prior art, namely armoring layers. It is beyond the level of ordinary skill in the art to so enlarge steel rods wound together with the tubes of an umbilical as to be able to entirely eliminate a layer of the umbilical. For the foregoing reasons, it is submitted that all of the independent claims mentioned above are distinguishable from the prior art.

The Examiner's Office Action dealt in detail with all of the claims, including the dependent claims. It is submitted that detailed comments concerning all of the claims are not needed in view of the amendments to the independent claims and the foregoing remarks. All of

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the dependent claims include those features of the independent claims that distinguish from the cited prior art.

Claim 11 was separately rejected over the Birkelund and Carroll and further in view of the API specification which was cited for its description of filler material in the umbilical. Reconsideration is requested of this rejection for the same reason as it was requested of the rejection of the other claims.

In view of the amendments to the claims and the foregoing remarks, it is submitted that the amended claims 1-13 are allowable and their allowance is requested.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Asst. Commissioner for Patents, Washington, D.C. 20231, on May 1, 2002:

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Name of applicant, assignee or
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Signature

May 1, 2002

Date of Signature

Respectfully submitted,

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